

PATENT CLAIMS

1. A procedure for testing the function of a lamp circuit, consisting of at least one lamp, by measuring the current and voltage, **characterised in that** a resistance value is taken into account which is specified as a polynomial of at least the 1st order, depending on the effective measured voltage on the lamp circuit, whereby the parameters of the polynomial are determined by a number of measurements which at least correspond to the order of the polynomial when operating conditions are known to differ, and the resistance value or a value derived from it are compared with a specified value.
2. A procedure according to claim 1, **characterised in that** a polynomial of at least the 2nd order according to $R = b \cdot U^2 + c \cdot U + d$ is used.
3. A procedure according to claim 1, **characterised in that** a polynomial of at least the 3rd order according to $R = a \cdot U^3 + b \cdot U^2 + c \cdot U + d$ is used.
4. A procedure according to claim 1, 2 or 3, **characterised in that** the resistance value is related to the nominal power, in which when measurements are taken under operating conditions which are known to differ, the parameters of the polynomial of the resistance value are in each case multiplied by the nominal power.
5. A procedure according to any one of claims 1 to 4, **characterised in that** the parameters of the polynomial of the resistance value are specified for a specified quantity of lamps which may be potentially used, whereby the lamps show nominal voltages which deviate from each other under the nominal voltage, and the resistance value is standardised to a shared nominal voltage, in which when measurements are taken under operating conditions which are known to differ, the parameters of the polynomial of

the resistance value are in each case multiplied by the ratio of the shared nominal voltage to the averaged voltage of the lamps under nominal voltage.

6. A procedure according to claim 4, **characterised in that** the nominal power of the lamp circuit is calculated as the value to be compared with a specified value according to the formula:

$$P_{nom} = R_{spec} \cdot \frac{I_{lamp}}{U_{lamp}} \quad \text{whereby}$$

I_{lamp} is the effective current through the lamp circuit

U_{lamp} is the effective voltage above the lamp circuit

R_{spec} is the specific lamp resistance value in [$\Omega \cdot W$] related to the nominal power

7. A procedure according to claim 5, **characterised in that** the nominal power is calculated as the value to be compared with a specified value according to the formula:

$$P_{nom} = R_{spec_norm} \cdot \frac{I_{lamp} \cdot U_{nom_act}}{U_{lamp} \cdot U_{norm}} ; \quad \text{whereby}$$

I_{lamp} is the effective current through the lamp circuit

U_{lamp} is the effective voltage above the lamp circuit

R_{spec_stand} is the specific lamp resistance value in [$\Omega \cdot W$] in relation to a shared nominal voltage and nominal power

U_{norm} is the agreed shared nominal voltage, and

U_{nom_act} is the calculated voltage of all lamps under the nominal voltage

8. A procedure according to claim 4, **characterised in that** as a specified value, the set current through the lamp circuit under the effective voltage is calculated according to the formula:

$$I_{\text{lamp_set}} = \frac{P_{\text{nom}} \cdot U_{\text{lamp}}}{R_{\text{spec}}}$$

9. A procedure according to claim 5, **characterised in that** as a specified value, the set current through the lamp circuit under the effective voltage is calculated according to the formula:

$$I_{\text{lamp_set}} = \frac{P_{\text{nom}} \cdot U_{\text{lamp}}}{R_{\text{spec_norm}}} \cdot \frac{U_{\text{norm}}}{U_{\text{nom_act}}}$$

10. A lighting system consisting of at least one lamp (L1, L2, L3) and one control unit, which records the current and voltage, and completes the procedure according to any one of the above claims 1 to 9 in order to calculate the resistance of the lamp (L1, L2, L3) or a value derived from it, and which compares this with specified values, detecting when any deviation from the specified values occurs that the lamp (L1, L2, L3) is defective, or does not comply with the specification.
11. A lighting system consisting of at least two lamps (L1, L2, L3) switched in parallel and a control unit which records the current and voltage, and completes the procedure according to any one of the above claims 1 to 9 in order to calculate the resistance of the lamp (L1, L2, L3) or a value derived from it, and which compares this with specified values, detecting when any deviation from the specified values occurs that the lamp (L1, L2, L3) is defective, or does not comply with the specification.
12. A lighting system according to claim 11, whereby the lamps (L1, L2, L3) are switched in parallel with a differing nominal power, and a deduction is

made from the size of the deviation from the specified values as to which of the lamps (L1, L2, L3) which are switched in parallel is defective.